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VOLVME TWO

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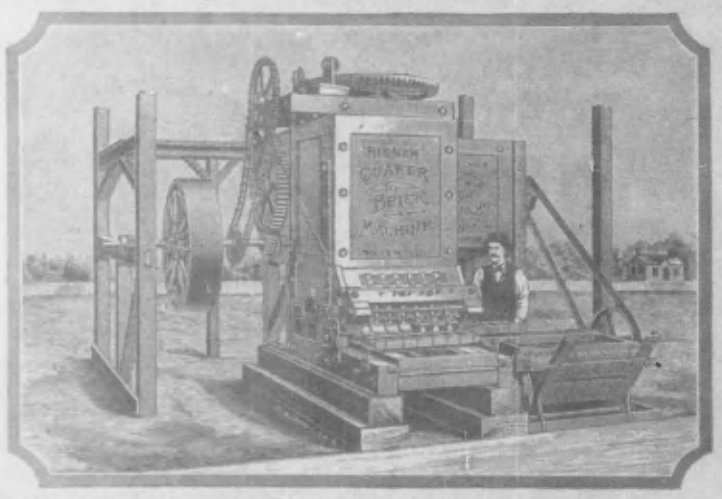

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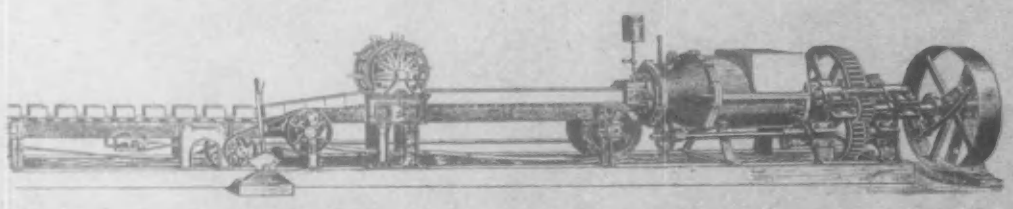

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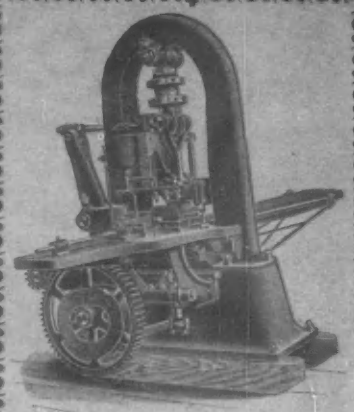

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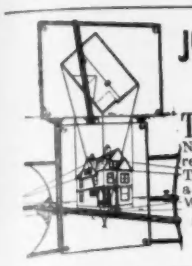

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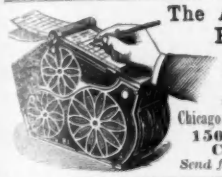

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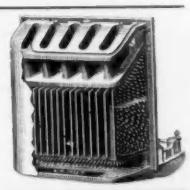

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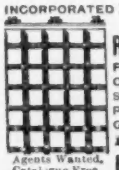

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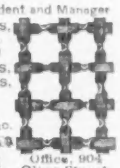

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THE BRICKBUILDER

VOL. II. BOSTON, APRIL, 1893. No. 4.

ROOFING TILES.

WHY NOT HAVE MORE VARIETY?

From the British Clayworker.

IT is quite time that the attention of the manufacturers of clay goods was directed to the possibilities which are latent in the roofing tile. At present there is very little enterprise in this direction: manufacturers fail to see that it behooves them to create a desirable material for roofing buildings; architects and builders would soon use it, if they found that it presented superior attractions or advantages. That this is the case is evident from a consideration of the conditions or circumstances governing the use of any material used for building in a large town; some one has to show that a certain material can be obtained at a reasonable price, and that it is better suited to the requirements of the architect, either on account of its strength, durability, decorative qualities, etc., and at once a demand for it arises. If the manufacturers of roofing tiles would exhibit similar enterprise, there is no doubt they would find their efforts rewarded.

Apart from the lack of enterprise which too frequently limits the trade of the clay-worker, there is of course one great competitive material which has undoubtedly checked the development of the roofing tile in this country; we refer to the slate, which by reason of its cheapness, its uniformly good quality, and the ease with which it can be applied to a roof, has come into very general use. But no sanitary expert would place the slate before the tile; and in these days, when, in spite of the popular devotion to cheapness, people care a very great deal about the hygienic condition of their dwelling houses, we think there will be an increasing call for the terra-cotta roofing tiles. Slate roofs absorb and transmit a good deal of heat; terra-cotta tiles, on the other hand, act as non-conductors of heat, thus keeping the upper portion of a house warmer in winter and cooler in summer. In other respects, the tile compares favorably with the slate.

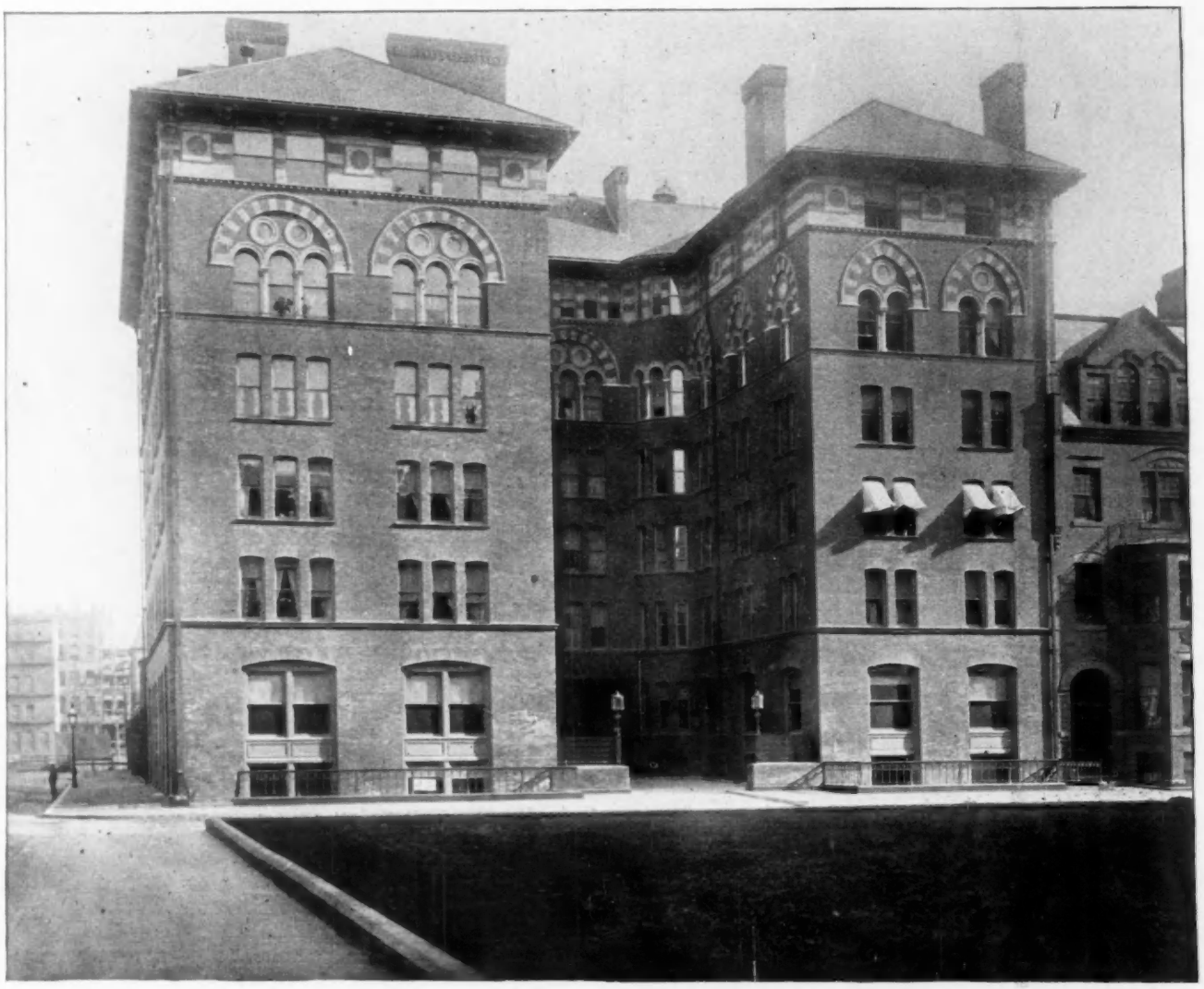
It has been stated that tiles are not so durable as slates, and hence the latter are preferred. This statement is partially true; some tiles are incapable of standing even one moderately hard frost! And why? Simply because they have not been properly burned. The average clay-worker seems to be under the impression that no more care is required to burn a tile than to burn a brick; but, owing to their being so much thinner, it is obvious that the same principles must not guide the burner in the case of both bricks and tiles. Great uniformity of temperature is required, and the tiles should be "set" in "bungs," or courses, of twelve (the direction being reversed with each bung, thus "twelve and twelve about") in that part of the kiln in which this uniformity can be best secured. For burning blue tiles, the circular oven is generally considered the best; but for the ordinary red or colored (not glazed) almost any kiln will give good results if the above precaution be observed. When drawing the kiln, the tiles should be "rung" as they are taken out, and the soft ones put aside for "setting" again when the next kiln is burned. A well-burned tile, free from cracks, or "limeheaves," will stand the hardest frost quite as well as the soundest slate that can be procured.

The lack of hardness of which we have been speaking is probably one reason why architects, in districts where such rubbishy goods are made, prefer to specify slate for roofing. But manufacturers sometimes err in the selection of the clay; if it exist in the clay bank, there is nothing better than a sound, strong, yellow clay, free from ochre lumps and stones. Some marls, however, make good tiles if they are properly weathered; but it must be remembered that although dry summer weather disintegrates a layer of marl, frosty weather is infinitely preferable. Hence, with marls that need weathering, it is better to expose them all the winter so that the frost may get a good hold of them: such exposure makes the clay knead well, and gives it great cohesive power. The object of this process is of course to open the pores of the marl and to separate the particles, so that it may absorb water more readily, and may "mellow" more satisfactorily and become plastic. Weathered marl is never too strong for tile-making, but some kinds of surface clay, that contain little silica, prove too strong for this purpose; the fault may always be corrected, however, by a judicious mixture with clean, sharp sand before passing it through the mill. If the clay is too strong, the tiles will

twist. The occurrence of lime in clay is a very serious factor to be dealt with. It renders even the weathering of clay necessary, for however carefully such clay be milled, even though the rollers be brought so close as to strain the engine, the difficulty will assert itself in the finished goods. When weathering cannot be resorted to, closing the rollers and grinding the clay more than once will have some good effect; but we should strongly advise manufacturers never to allow a "lime-blown" tile to go out of the yard. Five per cent of such tiles will be enough to give goods a bad name; for, if not before, these tiles will open with the first frost, and make any roof which they cover both unsightly and less durable. A use can always be found for such tiles in covering hacks, etc.

Having now lightly touched upon the chief reasons why tiles are not used more, or why they are in bad repute in some districts, we desire to call attention to some of the latent possibilities existing in the tile as an architectural material, believing that if suitable tiles were procurable, architects would specify and builders use them in giving to our houses a much finer effect.

Generally speaking, we employ two classes of tile in this country, the flat tile, which is of German origin, and the pan tile, which was first introduced from Flanders. It is true that there are a few fancy tiles made, and that in certain districts the single and double Roman and triple tile are favored, but the houses of the United Kingdom are chiefly roofed with the pan tile and the flat tile. One would almost think that these are the only forms possible, but a visit to the South Kensington Museum would dispel such a delusion. Here a very great variety of roofing tiles may be seen. We wonder how many tile makers in this country have ever visited the Building Materials Department of our national museum. The architect, the metal-worker, the cabinet-maker, the wood-carver, indeed representatives of nearly all the handicrafts, may be seen at South Kensington almost any day, but especially on Saturday, eagerly studying the examples of the arts and manu-



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factures which are collected and arranged there; but the officials have told us that they rarely see a brick or tile maker there studying the old types or the forms which are used to-day in other countries.

A glance at the catalogue is sufficient to show the scope of this collection, yet there it lies almost forgotten! What wonder, then, that the tile trade in this country is pervaded with old-fashioned notions, and that the roofs of our dwellings are tiled with the same material which the farmer uses for his cow-sheds and pig-sties!

In Italy, France, and Switzerland, "interlocking" principles, which are used to some extent in England, are chiefly employed. By a series of ribs and corresponding depressions a form of tile is devised which more thoroughly excludes the water. But tile-makers in these countries never lose sight of the decorative effect of a tile, consequently the roofs, even in manufacturing towns, are highly picturesque. Throughout Germany the flat tile is the common form, but the borders are so rounded, pointed, or escaloped, and the tiles so mounted, that elegant effects are produced. Builders there do not content themselves with a plain red or dun-colored roof; colored tiles are used which are often glazed to enhance their effect. Every one who has seen pictures or photographs of German towns, such as Nuremberg for example, will have observed how deftly the tile is handled in covering dormer windows, gable-ends, etc.

If we want to do an increased trade in tiles, we must produce durable and more attractive goods. By studying the types of tile that are in use in various European countries we may accumulate useful ideas which will help us in designing new goods for our own trade. It lies with us to develop the possibilities which exist in the tile as a material for covering roofs; such efforts will not remain unrecognized, for æsthetic notions are becoming more general, and even the jerry-builder has discovered that he must do his "jerrying" artistically. No branch of the trade affords so much argument in favor of what we are pressing upon the attention of our readers as the manufacture of moulded bricks and structural terra-cotta work. The bricks afford the best analogy. A few years ago brick-makers were satisfied to make a few bull-nosed or chamfered bricks, and the demand even for these was limited. But, owing to the enterprise of some of the more enlightened manufacturers, the architect and the builder were shown what could be done with moulded bricks of varied patterns, with the result that a large demand immediately sprang up for this class of goods. This case is "on all fours" with that of tiles; at present we are mostly content to manufacture a few forms which do not lend themselves much to the creation of beautiful architectural effects. Yet we could make beautiful tiles if we cared to, and eventually create a lucrative branch of business.

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BRICK AND TERRA-COTTA BY STEPHENS, ARMSTRONG & CONKLING. FOR DETAILS SEE PLATES 26 AND 27.

TERRA-COTTA AND FAIENCE AS MATERIALS FOR ARCHITECTURAL AND DECORATIVE APPLICATION.

THE Italian term "terra-cotta," by which a certain class of burnt clay or earth is technically known, at once points to the source from whence it derives its present characteristic features as an architectural material. In such relationship its general use dates from the period of the Italian Renaissance; but, historically, it was known and used in much earlier times.

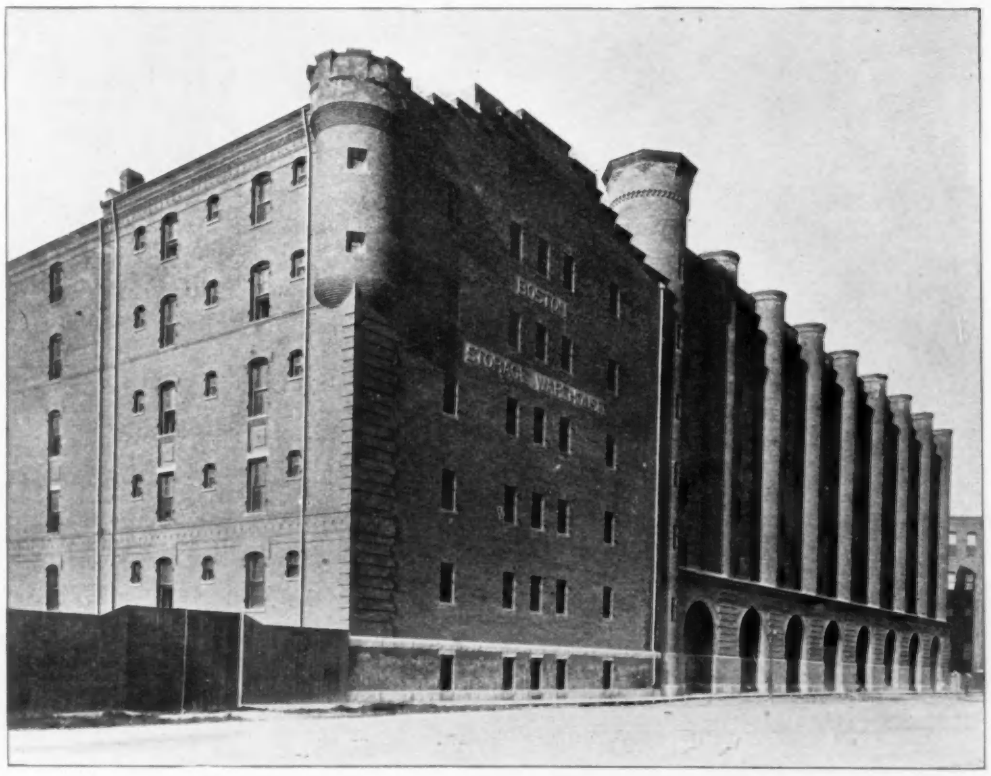
In fact, it may be said to be prehistoric in its origin, for in many forms it is one of the few links, and in some cases almost our only link, with nations of the most remote antiquity. Both in the form of bricks and more elaborate constructive and decorative forms, it was evidently largely used by the earliest builders known to us who can lay claim to architectural skill.

The remains, fragmentary and otherwise, of both Nineveh and Babylon, as revealed by the researches of Layard, Rawlinson, and Porter, clearly reveal its application, and afford not a few specimens of historical, antiquarian, and also of architectural significance. Whether, in fact, the remains of the very earliest builders of whom we have record can or cannot be absolutely identified, we are, nevertheless, in the use of terra-cotta merely following in their wake, for we read of the men of the East, when migrating westward, that, "coming to the land of Shinar, they dwelt there, and said one to another, Let us make bricks and burn them thoroughly; and they had brick for stone." It is not my purpose, however, this evening, to touch upon the historical aspect of the subject, although it might well deserve, and would certainly repay, attentive consideration.

In incidentally alluding to the early authentic use of terra-cotta, I merely wish to remark that as an architectural material we have at least some ancient historical and not a few fragmentary testimonies to its value, and in considering its modern developments and uses it is not without significance to remember that we are not concerned with something new, but rather with the oldest composite and manufactured architectural material to which we have either historical or fragmentary reference.

That the burnt brick of the ancients is identical in material with the terra-cotta of to-day may seem at first a somewhat bold assertion, yet it is probable that it had a very close similarity to many varieties of so-called terra-cotta.

Burnt brick and terra-cotta are, as regards the nature of the material, synonymous terms. The former may be, and sometimes is, the coarser and rougher form, but not necessarily so, nor always by any means. Technically, we apply the term "brick" to forms of certain, or rather uncertain, dimensions and shape within recognized limits as to size, the maximum limit of size being generally that capable of being handled by one hand in the process of building; whilst the term "terra-cotta" is technically understood to refer to blocks exceeding this maximum, in form more resembling blocks of masonry, moulded in its plastic condition into the required shape and size, and applied architecturally on more or less the same principles of construction as are recognized for the use of stone blocks. This definition may be said to be of general application, but it may be remarked that since the introduction of machinery in making bricks a decided difference of process in the preparation of the raw material tends considerably to widen the distinction between terra-cotta and many classes of bricks. The manufacture of terra-cotta is essentially a plastic process. The manufacture of bricks is not now essentially or necessarily so, for in many districts the raw material is now treated in what is called the



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semi-plastic or the dry form, and worked into the required shape by mere force of compression, without any of the preparatory plastic treatment which gives to terra-cotta one of its principal qualifications as an architectural and artistic material. Although it is unquestionable that with certain shales and clays the dry or semi-plastic process of brick-making is capable of producing, and with suitable treatment does produce, bricks of excellent quality and hardness for building purposes at a very low rate of cost, yet, I think it will not be seriously contested, even by those interested in their production, that apart from the question of cost they are not entitled to rank with a suitable clay treated as a plastic material, and made into brick or terra-cotta, with due regard for the necessary qualities of a first-class building material. In our consideration of terra-cotta as a material for architectural and decorative use, within the limits at our disposal, I think I shall best serve your purpose by describing the nature and quality of the raw material.

The terra-cotta, the burnt brick of the ancients, was probably made of the rich clayey earth, or surface clay, of the alluvial plains, which, being plastic in its natural condition, was most easily susceptible of treatment with the simple appliances at their command. Varieties of the same alluvial formation are preferred in some districts and countries not only for the ease with which they are worked in the plastic form, but from their abundance and great accessibilities at a minimum cost.

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These surface clays were, however, in many respects the least desirable of the aluminous deposits available for terra-cotta. They preserve often, indeed, a high degree of plasticity, which is most desirable; but this valuable quality is often neutralized by an absence of strength, which renders them unsuitable for any purposes requiring exactness of form and shape, after exposure to even a low heat in process of burning. As a rule, these surface clays, being rich in alumina, and deficient in silica, are re-enforced in process of manufacture by the addition of sand and other silicious materials, and in some districts it would be impossible to treat the clay in any practical way without this or similar combination.

In not a few instances the material thus prepared is, however, only available for bricks burnt at a low heat either in clamps or ovens, and cannot take higher rank than a country-made common brick or a London stock brick. In other cases, by the addition of large proportions of sand, the tendency to twist and warp in burning is checked, but the product is often rendered very porous, and is deficient in the ring and hardness characteristic of a well-burnt brick material of a superior quality. The shales of the coal measures are in some instances used as a raw material for the manufacture of terra-cotta, but these also are often deficient in silica, and are also more or less in combination with other carbonaceous and deleterious substances. They require very skilful treatment to produce a terra-cotta of even moderate quality, and are, as a rule, deficient in the clearness of color characteristic of purer deposits of clay.

The natural clays most favorable to the production of the best terra-cotta are those in which silica and alumina bear a proportion of not less than about 60 parts of silica to 30 or 40 of alumina, with but little more than one or two parts of foreign material, chiefly ferruginous oxide. Such deposits are probably more plentiful than they are known to be, but the most important at present available are confined to limited areas, and are not numerous. They are of two or three varieties, viz.: 1st. The banks or pockets of red marls characteristic of some of the Midlands, Staffordshire, some parts of Cheshire, some parts of North Wales, some parts of Devonshire, with

here and there banks of marl similar in formation but with the coloring oxides more or less absent. These banks or beds are sometimes of considerable thickness, and present several varieties of clay. The thickest I know is in North Wales, and probably some hundreds of feet in total depth. It is a remarkably fine bed of red marl. 2d. Certain anhydrous strata of the coal measures, commonly known as fire-clays, a material com-

CAPITAL OF SALMON TERRA-COTTA
ON THE BUILDING OF THE MECHANICS' TRUST CO., BERGEN POINT, N. J. A. C. LONGYEAR, ARCHITECT, NEW YORK. MADE BY STEPHENS, ARMSTRONG & CONKLING, 1341 ARCH STREET, PHILADELPHIA.

posed of silica in varying proportions, from 60 up to 70 parts in the 100, and the rest of alumina, with but small admixture of foreign organic matter. These strata exist more or less throughout the entire area of the coal measures. But I think I shall not be guilty of undue partiality in stating what I believe is generally admitted by those best qualified to judge, that one of the purest strata of this clay hitherto worked in this country is in the Leeds district, and underlies the large area of what is known as the Low Moor or, better, bed-coal.

It lies at an average depth of (say) 60 yards below the surface, and is of an average thickness of about three feet. Having a considerable depth of cover, it is very hard and close in texture, and is got only by mining operations by the same methods as coal. An analysis of it indicates great refractile power, with almost perfect freedom from foreign matter or organic impurity. It is unquestionably a most excellent base, in connection with other material, for the production of terra-cotta in any form, from the simplest to the most elaborate, inasmuch as it secures: 1, the minimum of contraction in drying; 2, hardness and exactness of form when burnt; 3, solidity under pressure; 4, clearness of color. The clays of Dorsetshire have also been largely used for terra-cotta, and they are for the most part an excellent, clean and plastic material; but they are too deficient in silica to be used without considerable admixture. Although when in suitable combination they make excellent stone ware, and are invaluable to the potter, they are less desirable for architectural work. It will be inferred from what I have already stated that the question of suitable raw material for the production of first-class terra-cotta is by no means simple, and, in order to solve the matter satisfactorily, some manufacturers make from the clays of various districts what they consider to be the most suitable body. The London manufacturers, for instance, as well as some others, are compelled to rely entirely on clays from localities at a more or less considerable distance from the place of manufacture.

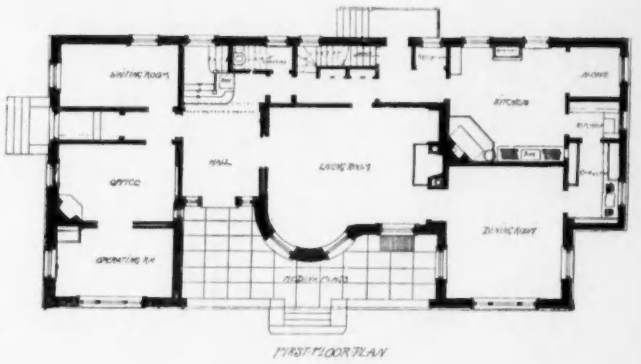
Although by judicious mixing it is no doubt possible to produce a thoroughly good and sound body, yet when the finer and more important proportions of the raw material are imported from considerable distances, often at a considerable expense, there is some danger (in these days of excessive competition) of the product suffering by a too sparing use of the most desirable constituents. I have incidentally alluded to the question of color; this is, however, a most important point in determining the value of a terra-cotta material for architectural purposes. The principal coloring matter is oxide of iron, present in one form or another in all genuine clays; but these oxides are very various in their quality and condition, and produce remarkably varying results under the action of fire. Some clay will develop by heat a rich deep red color, others a warm buff, and these again vary considerably according to the mode in which the heat is applied, or according to the amount of atmospheric oxygen admitted during the process of burning. The color qualification of each bed of clay can practically be determined only by experience, for although chemical analysis may indicate the actual quan-

SALMON TERRA-COTTA
IN HOTEL WALDORF, NEW YORK. H. J. HARDENBERG, ARCHITECT, NEW YORK. MADE BY STEPHENS, ARMSTRONG & CONKLING, 1341 ARCH STREET, PHILADELPHIA.

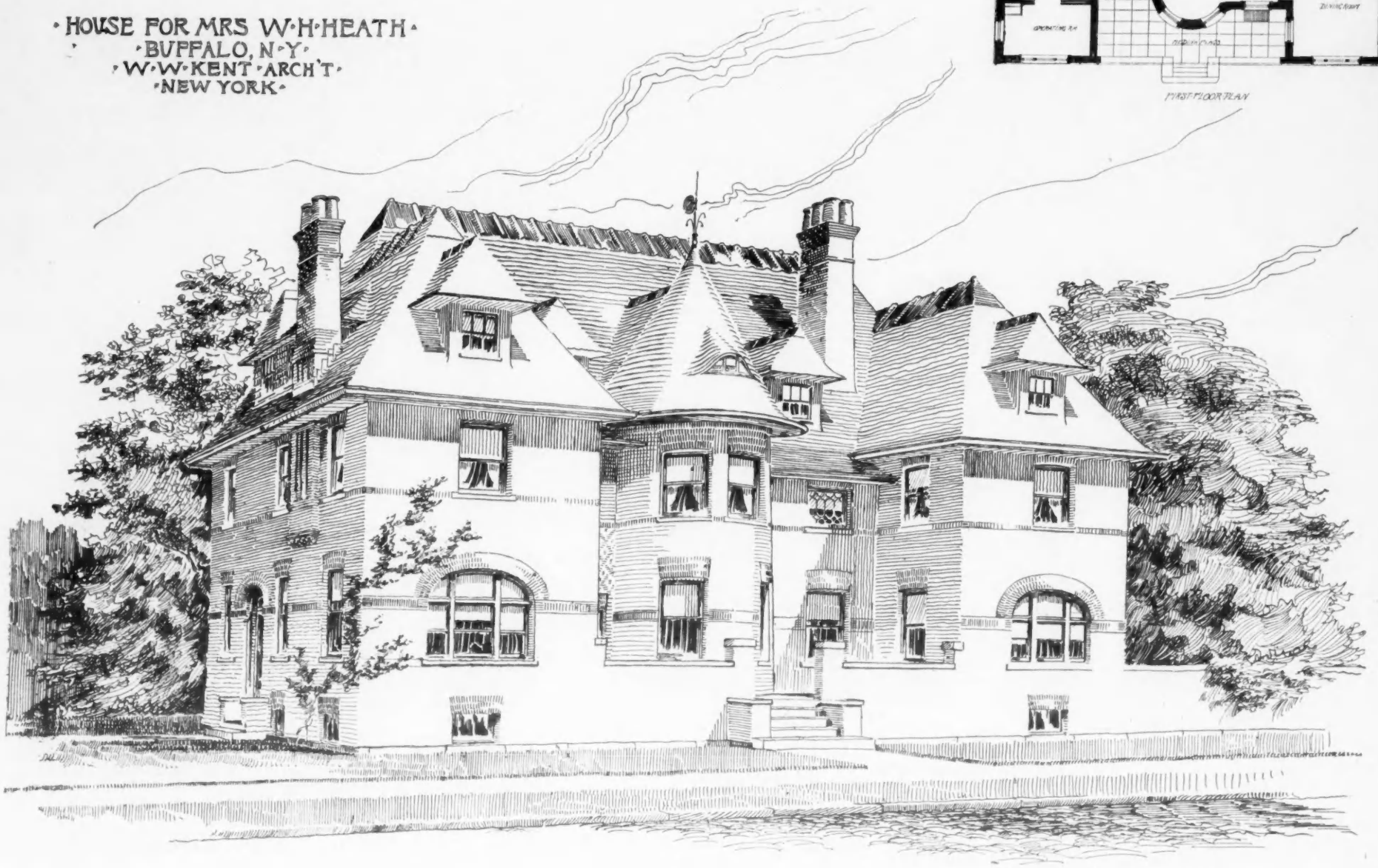
tity of iron oxide present, its effect is a matter of direct experiment. In some cases it is necessary to support the coloring properties of the clay by additional oxide; in other cases the oxide is present in too abundant degree, and has to be neutralized. — *The Building News.*

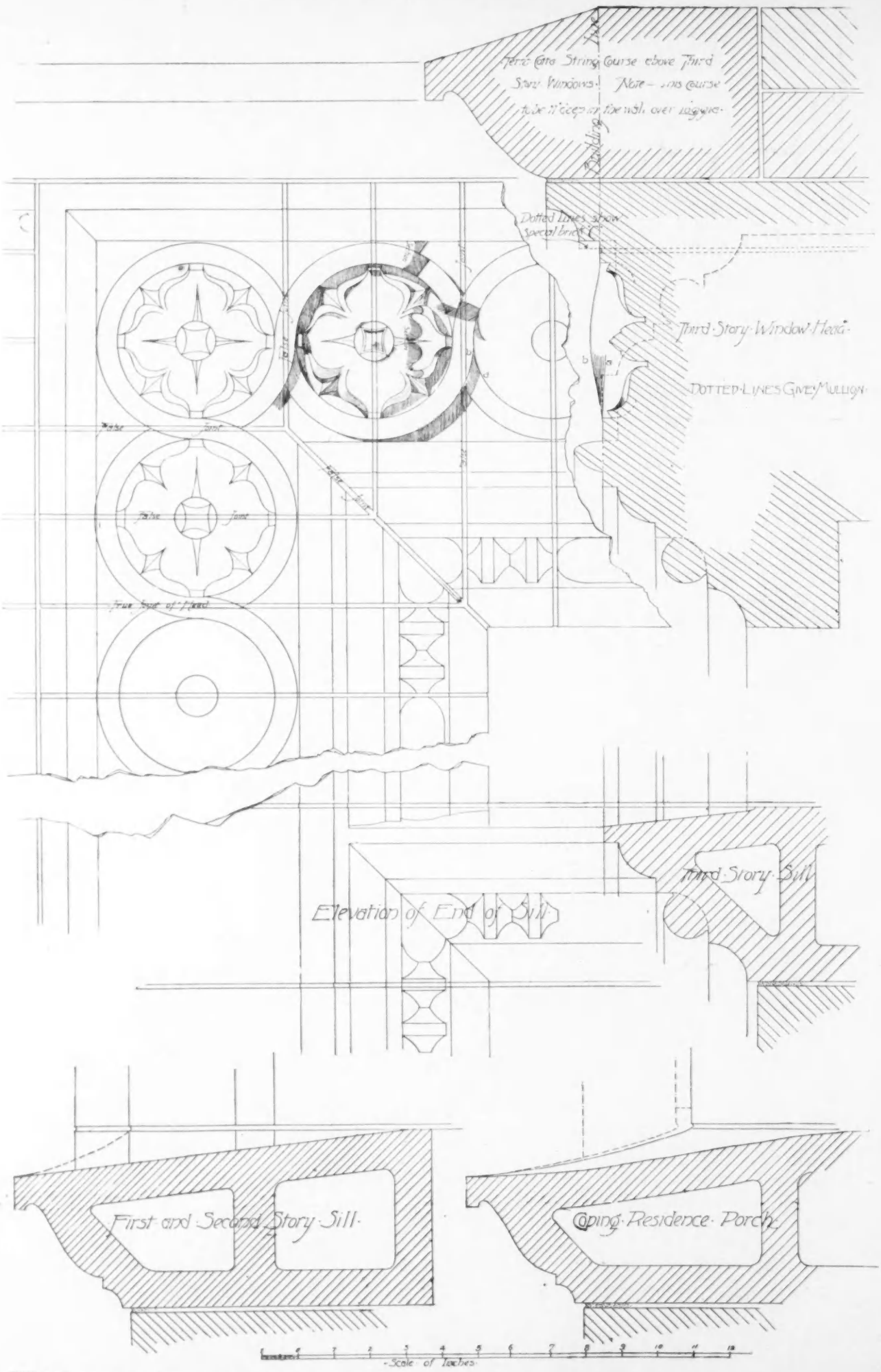
(*To be continued.*)

HOUSE FOR MRS W·H·HEATH
BUFFALO, N·Y·
W·W·KENT ARCH'T
NEW YORK

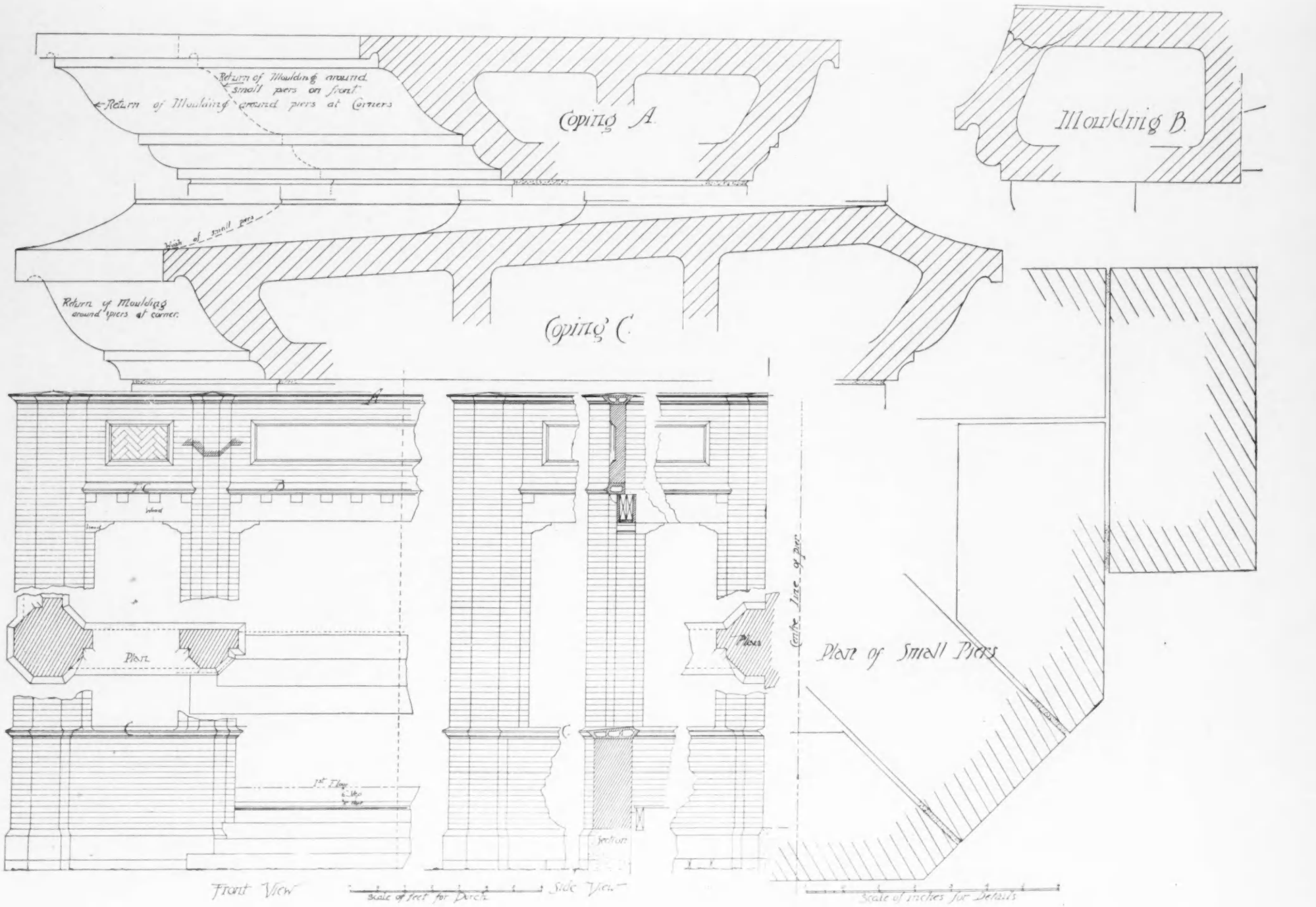


FIRST FLOOR PLAN



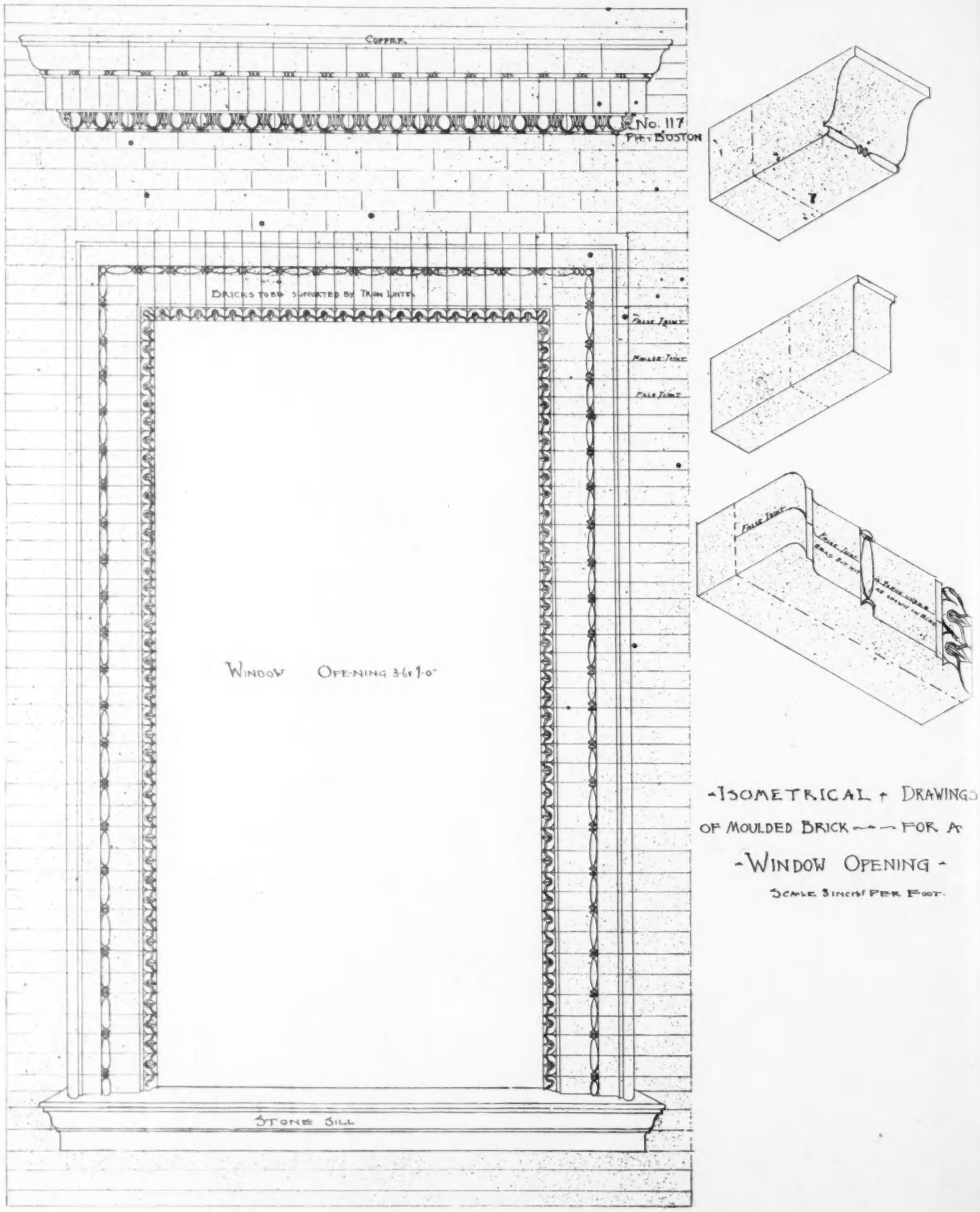

Terra Cotta String Course above Third Story Windows. Note – this course to be kept in the wall over niggers.
Dotted lines show special brick
Third Story Window Head.
DOTTED LINES GIVE MULLION.
Third Story Sill
Elevation of End of Sill
First and Second Story Sill.
Coping Residence Porch.
Scale of Inches

TERRA-COTTA DETAILS, FOULKE & LONG INSTITUTE, PHILADELPHIA. (See page 33.)
MESSRS. COPE & STEWARDSON, ARCHITECTS.



DETAILS OF PORCH, FOULKE & LONG INSTITUTE, PHILADELPHIA. (See page 33.)

MESSRS. COPE & STEWARDSON, ARCHITECTS.

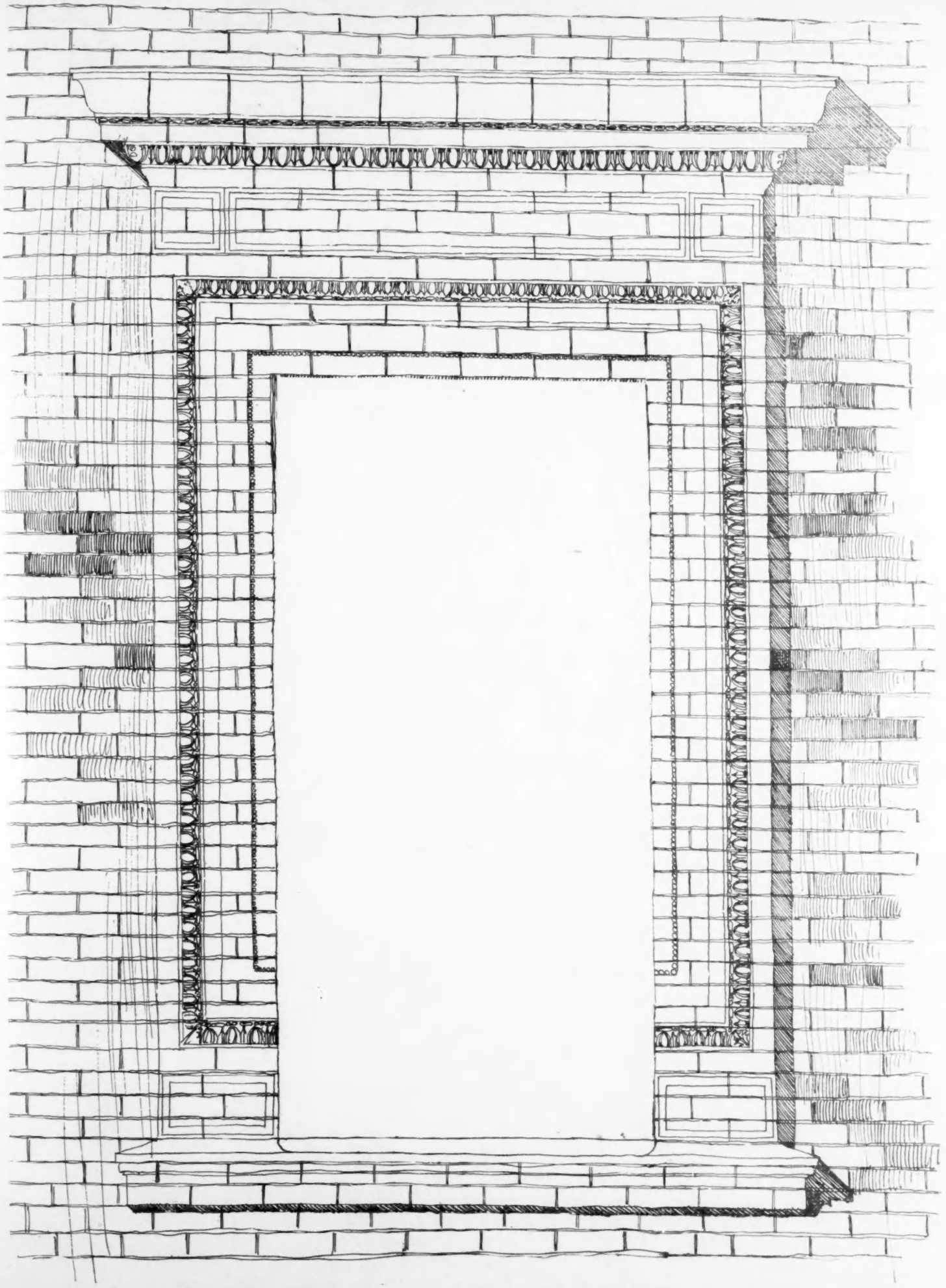


-ISOMETRICAL + DRAWINGS OF MOULDED BRICK — — FOR A -WINDOW OPENING-

SCALE 3 INCHES PER FOOT.

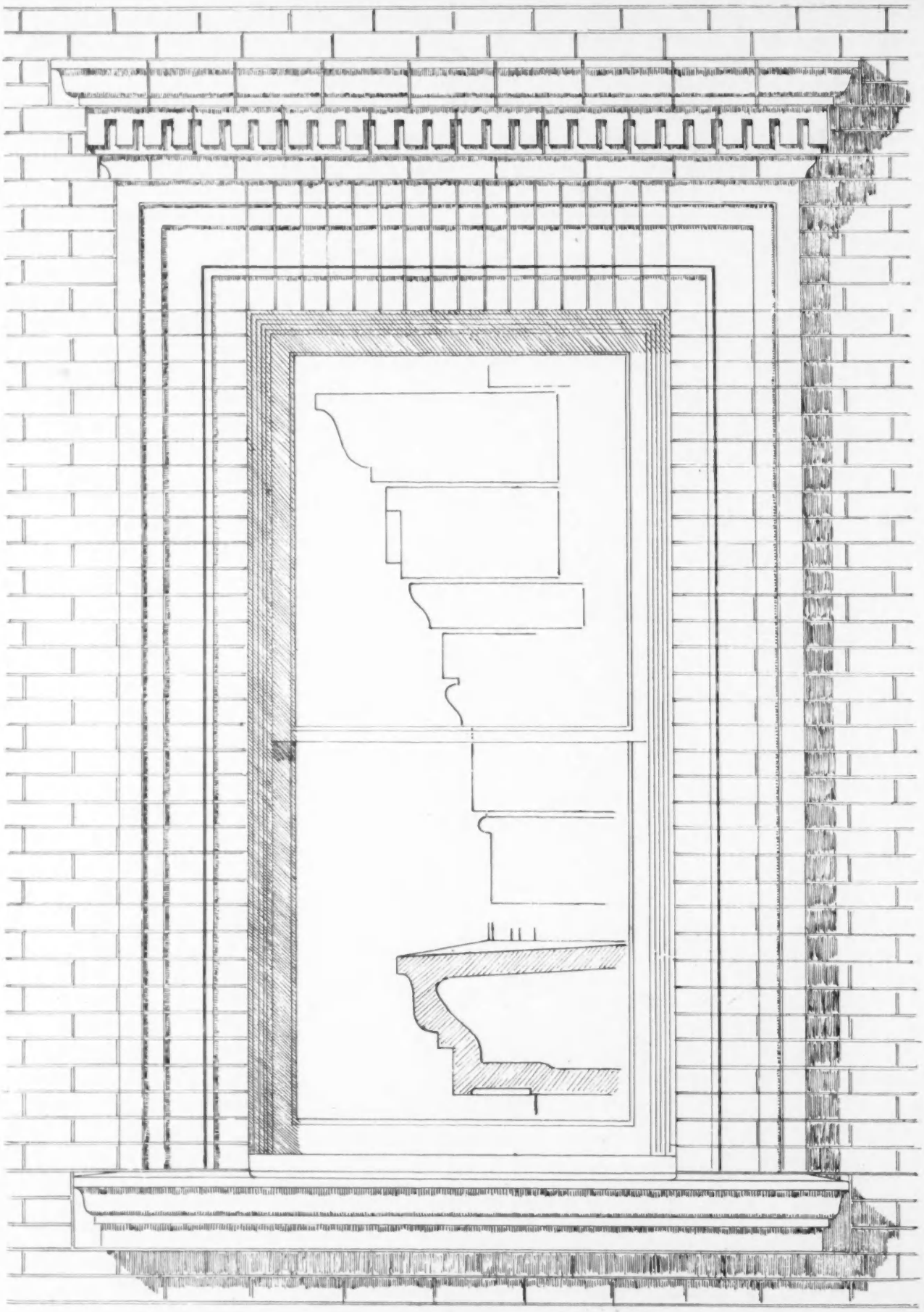
MINNESOTA CHAPTER, A. I. A. DRAUGHTSMEN'S COMPETITION. PROBLEM I.

FIRST MENTION. MAX FOCSTER.



MINNESOTA CHAPTER, A. I. A. DRAUGHTSMEN'S COMPETITION. PROBLEM I.

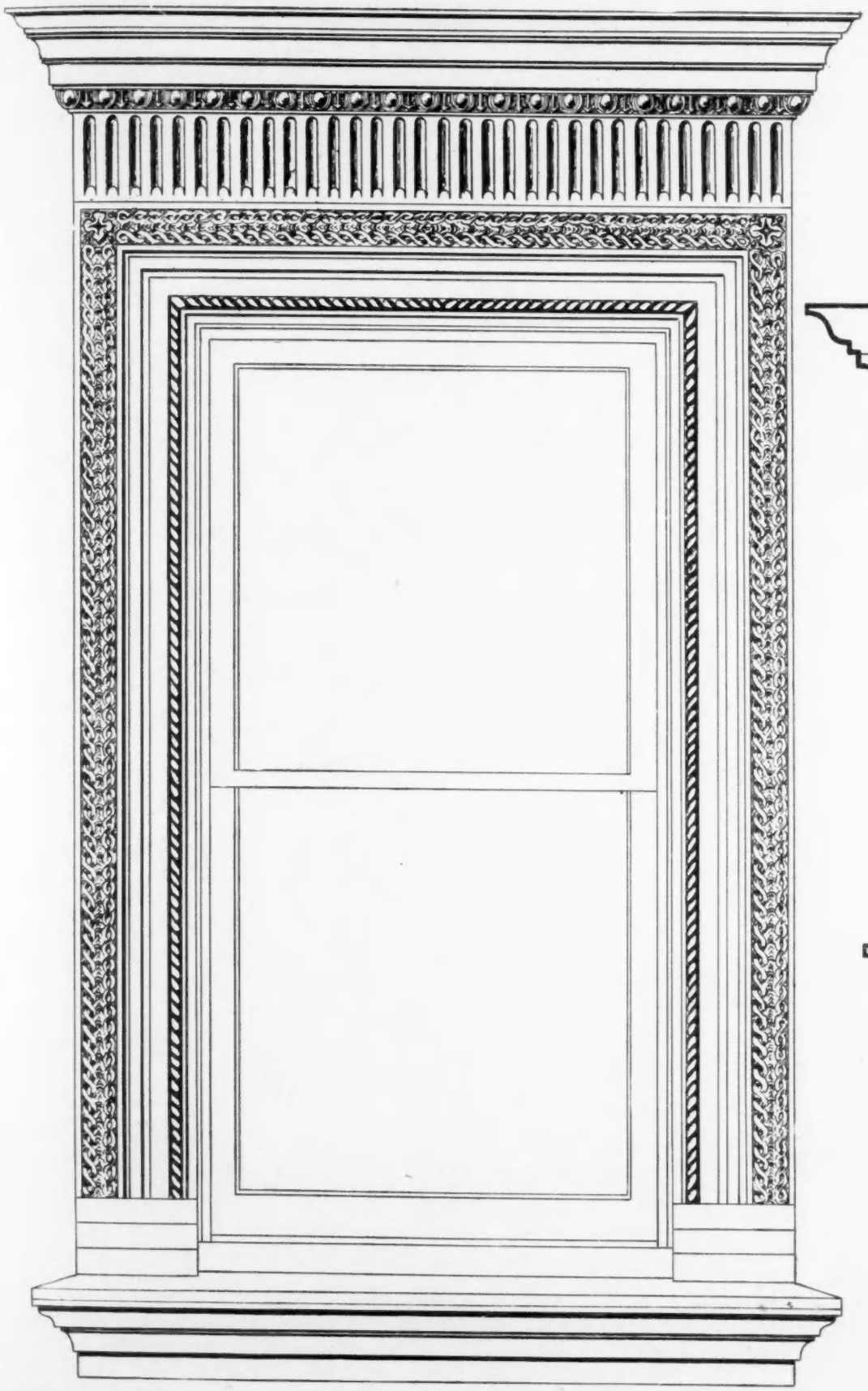
SECOND MENTION. JNO. RACHAC, JR.

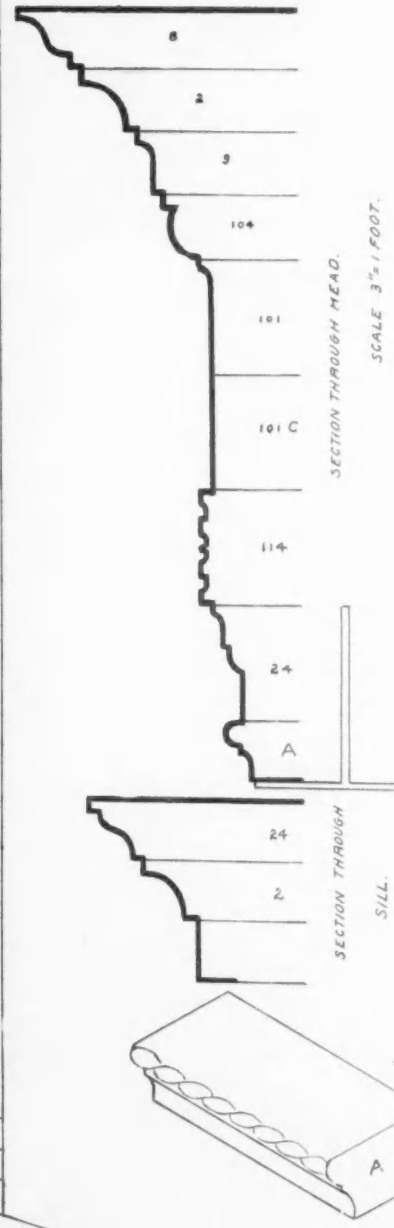


JANUARY PROBLEM
BY
CHARLES AUGUSTUS

MINNESOTA CHAPTER, A. I. A.

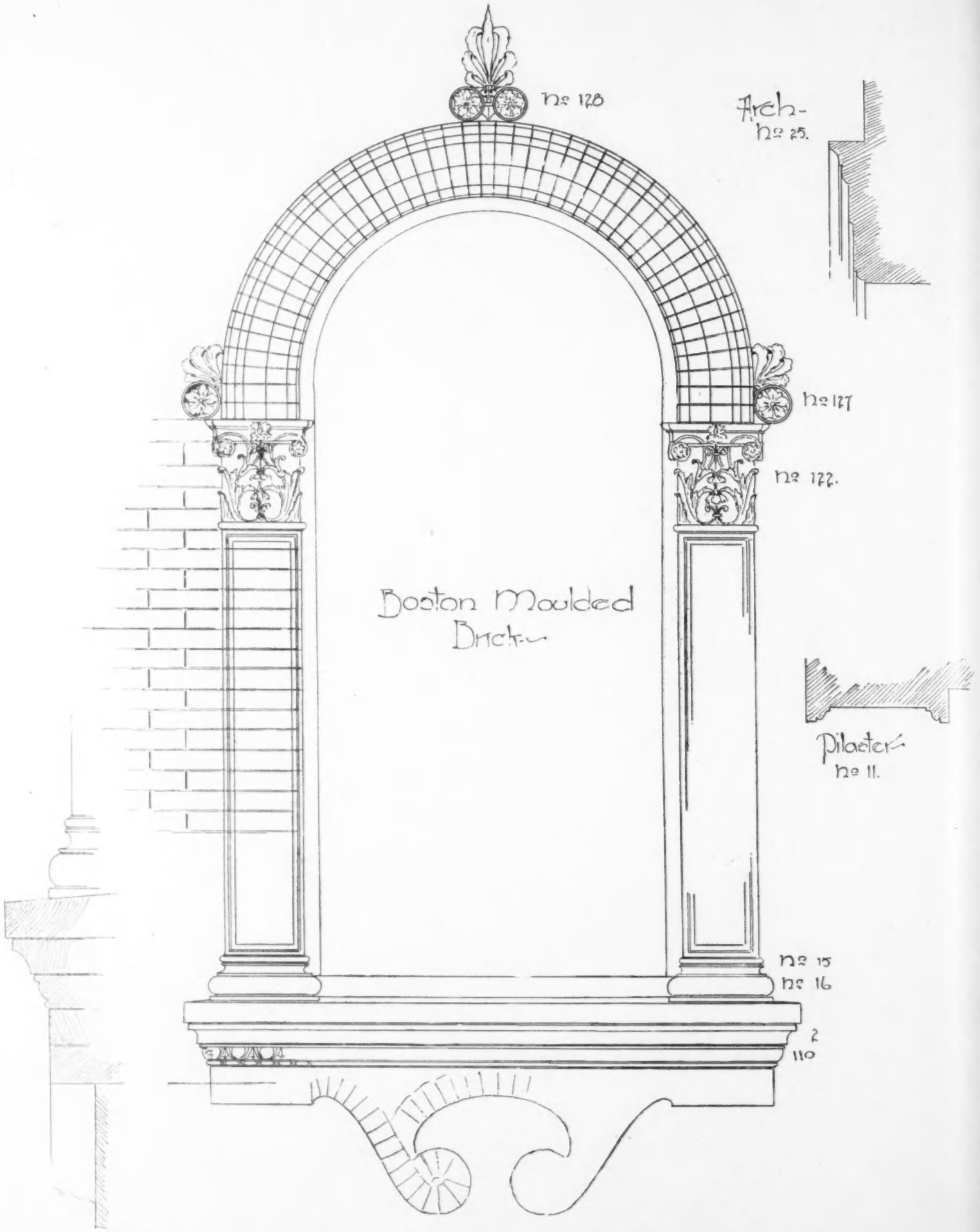
DRAUGHTSMEN'S COMPETITION. PROBLEM I. HONORABLE MENTION. N. C. SCHRANTZ.





MINNESOTA CHAPTER, A. I. A. DRAUGHTSMEN'S COMPETITION. PROBLEM I.

HONORABLE MENTION. LEO GOODKIND.



MINNESOTA CHAPTER, A. I. A. DRAUGHTSMEN'S COMPETITION. PROBLEM I.

DESIGN BY FRED NASON.

THE BRICKBUILDER.

AN ILLUSTRATED MONTHLY DEVOTED TO THE ADVANCEMENT OF ARCHITECTURE IN MATERIALS OF CLAY.

PUBLISHED BY

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RED TERRA-COTTA CAPITAL

(1 FOOT 6 INCHES HIGH), ON STONE BUILDING, 1013 MARKET STREET, PHILADELPHIA. FRANK R. WATSON, ARCHITECT, PHILADELPHIA. MADE BY STEPHENS, ARMSTRONG & CONKLING, 1341 ARCH STREET, PHILADELPHIA.

THE subject of American roofing tiles is one that we had hoped to give considerable attention, but the makers have rather discouraged us. Some weeks ago we wrote personally to every maker of roofing tiles whose address we could find, stating that we wished to have some competent writer prepare a series of practical articles descriptive of the different tiles made in this country, giving their size, weight, method of laying, absorption, cost, and any other information of a useful nature. We asked the makers if, in case a fully competent writer could be secured, they would assist us by forwarding a sample of their tile, and necessary information respecting this. Merely a brief answer was requested, and out of some thirty who were addressed three only had the courtesy to reply.

We are at a loss to account for this. The unwilling inference is that their tiles will not bear description of the impartial character we had in view. While this is doubtless the reason in some cases, it is hardly possible that it is so in all. We have not wholly given up the idea of such a series of articles, and we would again ask all manufacturers of roofing tiles to write us, promising their co-operation; for it is only with it that the articles can be made exhaustive and accurate enough to be useful. We had under consideration a special department of the paper, to be devoted to roofing tiles; but this is tabled until we can be more fully assured the tile-makers are in sympathy with the project.

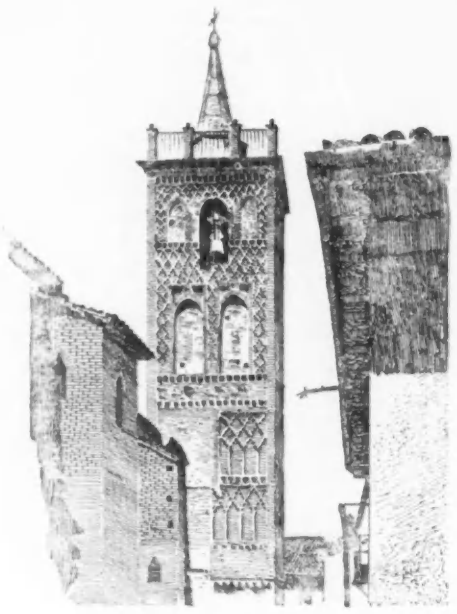
RED TERRA-COTTA CAPITAL

(1 FOOT 6 INCHES HIGH), ON STONE BUILDING, 1013 MARKET STREET, PHILADELPHIA. FRANK R. WATSON, ARCHITECT, PHILADELPHIA. MADE BY STEPHENS, ARMSTRONG & CONKLING, 1341 ARCH STREET, PHILADELPHIA.

THE BRICKBUILDER has from its initial number strongly advocated the introduction of more color into our architecture. Believing that the best material for producing color effects is glazed or enamelled ware, now generally known as faience, it has given considerable space to the subject at the risk of having some readers consider it the advertisement of one firm; and such it is, virtually. But in all arts and sciences there is a stage when achievement along special lines secures leadership, — when such achievement becomes the standard by which less successful works are judged. When such a position is attained, advertisement is unnecessary. Certain names in every field of art or industry are household words. The public is interested in them, and press notices are no longer considered advertisements: they are news.

Simply because Messrs. Fiske, Homes & Co. and Messrs. Atwood & Grueby are practically alone in the production of successful glazed and enamelled ware, because, until surpassed, their achievements must form the standard for modern American manufacture, the space we have devoted to architectural faience has been in one sense an advertisement for them; and let it be so. This work, while undoubtedly commercial, as all manufacturing must be, is so artistic, shows so strong an endeavor towards perfection, that it can but be applauded by every architect, whether or not he cares to use such material.

It is the province of THE BRICKBUILDER to keep pace with the producers as well as with the users of materials of clay. No recent advancement in clay-working is of the importance of this glazing and enamelling of terra-cotta, and we feel every encouragement should be shown the associated firms engaged in the work.



DRAWN FOR COMPETITION No. 9,
By E. B. Nolan, Rochester, N. Y.
A beautiful subject, well rendered. If of the three structures shown all were brick, this drawing would rank well. D. A. Gregg.

ALL BRICK WALLS FOR DWELLINGS OR STORES SHOULD BE BUILT HOLLOW.

I HAVE, in previous articles, pointed out the best way to build hollow walls, but I will here repeat, that for common small dwellings, where only 8½-inch thick walls are to be put up, the best and cheapest way is to set inside two or three courses of brick on edge, then bind to outside course flat, with a "*header*." Every fourth and fifth header should be a *bat*, so that a free circulation of air can be had, from bottom to top of the wall. Fine *grates* of iron or clay, about 4 x 12 inches, should be set in the *base* or *washboard*, on the floor, so that the foul air in the room will pass into the hollow of the wall. If the room be properly ventilated, the temperature in the hollow space in the wall will always be high enough to cause a draft.

No *furring* is needed for *lath*, as no *lath* are used. The plastering is put on the brick and is never damp from dampness in the outside wall. If the walls are well built in this way, they are as strong as if solid. Door and window jambs should be *returned* solid, and a four-inch *pilaster* on the inside gives strength, beauty, and utility to the wall. The *pilasters* may be carried up from the foundation, if the doors and windows are regularly *spaced*, one above the other.

J. S. Crary, Sr., in *The Clay-Worker*.

NOTICE TO COMPETITORS.

All who entered our competition for a brick gable are requested to send us at once their addresses and the mottoes under which the designs were submitted. — *Eds.*

BRICK ONLY ENDURE.

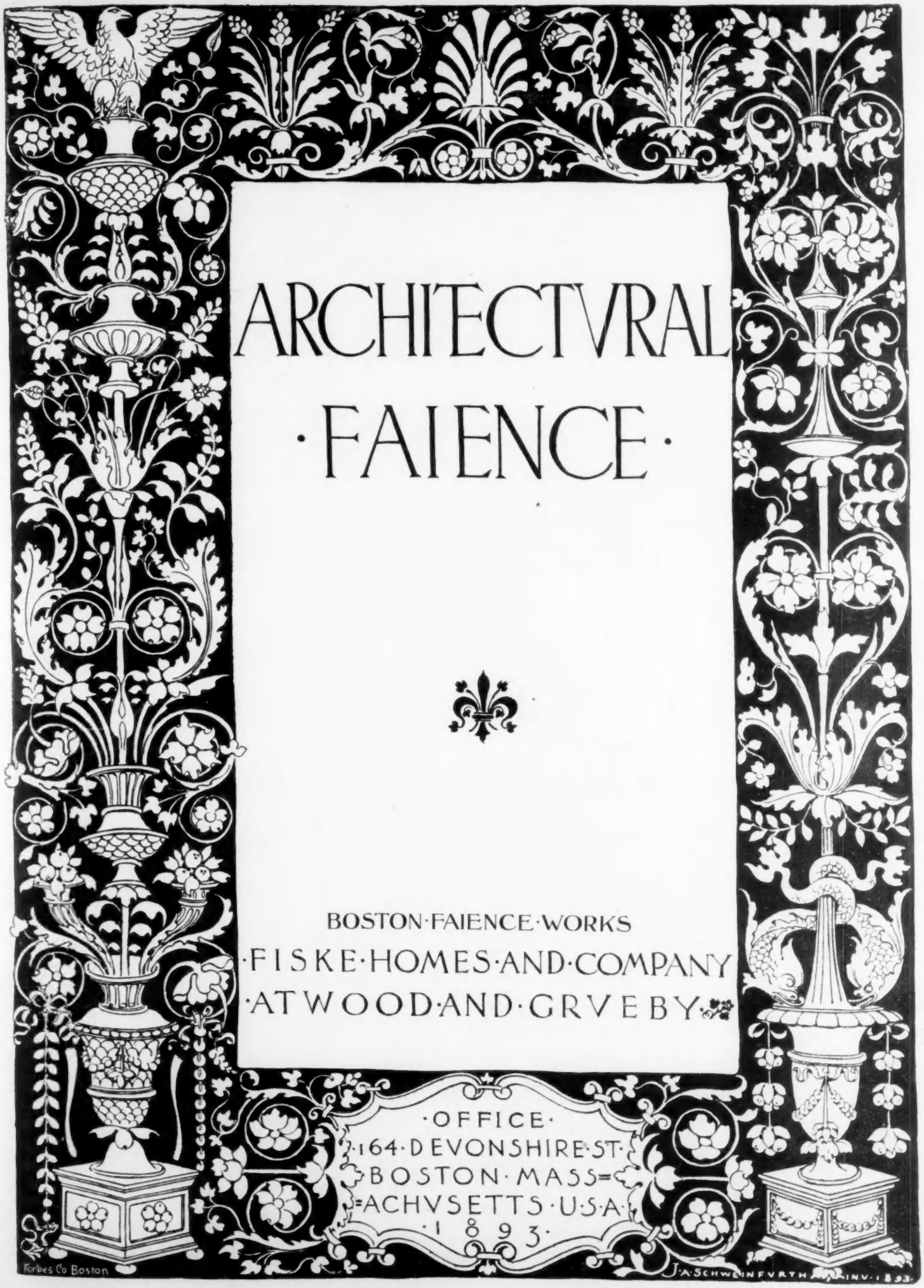
Common clay made into brick and dried in the sun brings down to us written lessons from nearly as far back as the days of the Pyramids. Made into brick and burned by the Romans, it forms the heart of structures from which the limestone coverings have long since disappeared. Apparently indifferent to air, sun, water, and time, brick has the best building record. In addition to indifference to time, weather, and surroundings, a perfect contempt for fire, and when granite walls are shattered and limestones are shivered, bricks ask only to be allowed to depend upon themselves. For thousands of years experience has demonstrated that brick is not only time-proven, but that brick is the only fire-proof material which, with safety, can be relied upon to carry the weight of tall buildings with walls of minimum thickness. Brick is the only material made by men which will outlast all natural building substances. Wood will decay; iron, steel, and stone are oxidized and disintegrated by the action of the elements. All of these natural building substances have been proven to be unsafe in great conflagrations.

Clay Record.

THE DURABILITY OF TERRA-COTTA.

During the discussion following the reading of certain papers on terra-cotta before the Royal Institute of British Architects, Sir Henry Doulton said: "As to its durability, I may perhaps mention two examples which occur to me as within my own observation: The figure of Britannia on the top of the Exchange at Liverpool, made a hundred years ago at Lambeth, and also the figure of St. John Crosby, which was made, when I was a little boy, at Lambeth. These, especially the figure of Britannia, though exposed to adverse influences, are as perfect today as on that of their erection. There happen to be two large statues on the triangular piece of ground opposite St. Thomas Hospital, brought here recently, also made at Lambeth, which are ninety-six years old, and which have been quite untouched by time. There is, of course, terra-cotta and terra-cotta; but there is no reason why terra-cotta should not be absolutely imperishable.

DRAWN FOR COMPETITION No. 9,
By F. A. Henninger, Omaha, Neb.
Sparkling in color but bad in perspective. The sky is too spotty. D. A. Gregg.



COVER DESIGN FOR THE CATALOGUE OF THE BOSTON FAIENCE WORKS.

BY J. A. SCHWEINFURTH.

BOOKS AND PAPERS.

IT is with great pleasure that we call the attention of our readers to one of the most artistic catalogues ever presented by any manufacturers of building supplies. There are few industries that present better opportunities for artistic catalogues than the clay-working industry. That we do not often find these opportunities seized is all the more reason for the strongest commendation when we do, and we desire to compliment Messrs. Fiske, Homes & Co. and Atwood & Grueby upon their good fortune in securing the services of a designer of Mr. J. A. Schweinfurth's ability, not only in the preparation of their catalogue, but upon the far more important work of designing their stock patterns. It is another instance that strengthens the position (if, indeed, it need strengthening) THE BRICKBUILDER has maintained from the very first, — that good results are only possible where architect and manufacturer work together.

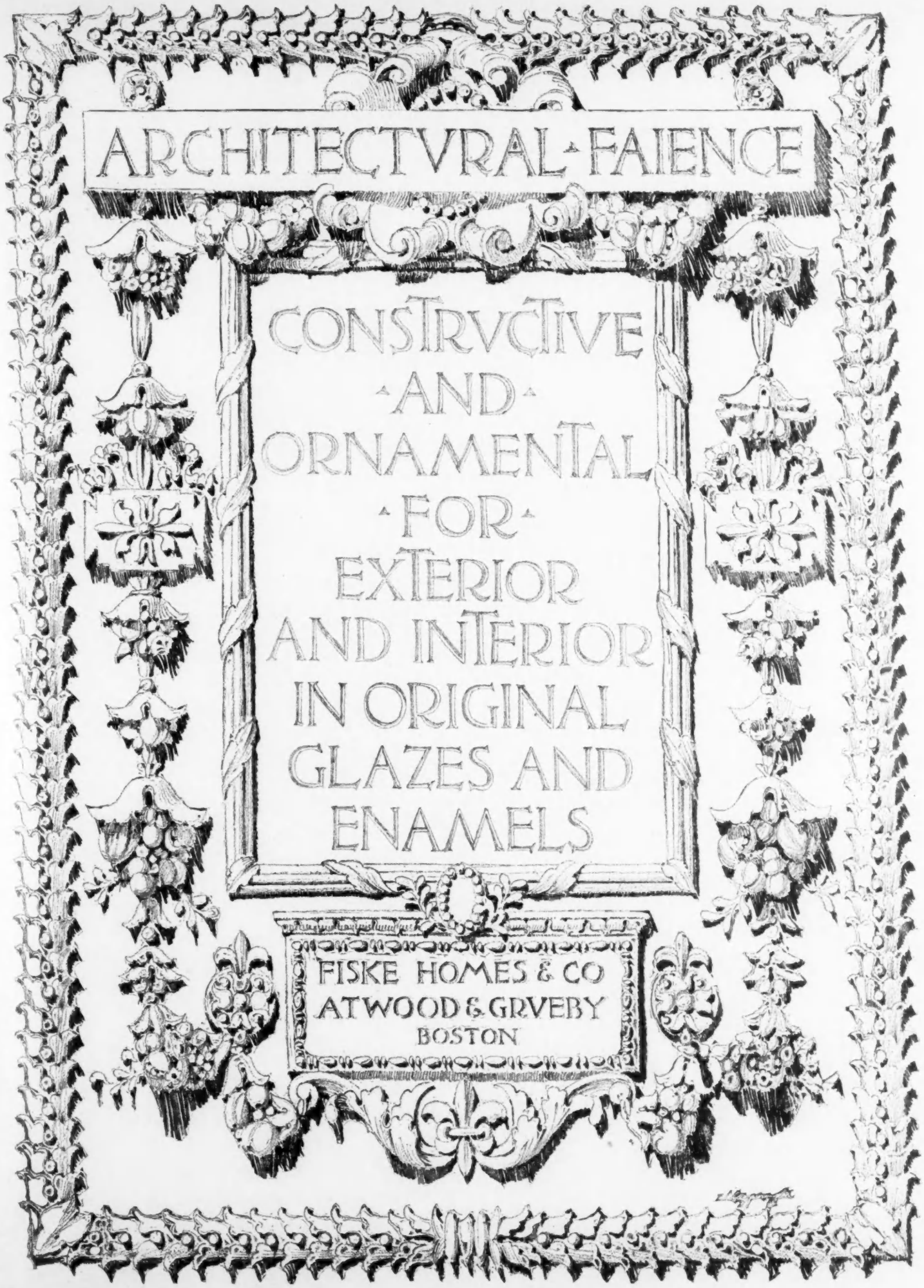
The scheme of the catalogue is that of a portfolio of albertype plates, the nucleus of a collection being sent with the portfolio, which is made to accommodate additions from time to time in the future, as new work is produced by the manufacturers. The portfolio is covered with a beautiful greenish gray shade of Lalanne charcoal paper, on which is printed in black the rich cover design by Mr. Schweinfurth, illustrated on the preceding page. The title-page, illustrated opposite, is by Mr. Harold Magonigle, who is also the designer of the new cover of THE BRICKBUILDER.

Plate I. reproduces at large scale the design for a faience mantel, illustrated by a small half-tone in our January number. Plate II. gives another large faience mantel of entirely different character, while Plates III. and IV. each give two designs for small mantels, all varying in treatment and ably illustrating the possibilities of this material in the hands of a clever designer. All the foregoing are the work of Mr. Schweinfurth, both in design and rendering. In the latter respect they are particularly happy, and no draughtsman could have better models for study in brush rendering. Plates V. and VI. are photographs of details from the waiting-room of the Philadelphia & Reading terminal station at Philadelphia, of which Wilson Bros. & Co. are the architects. Perhaps these examples are put in to counteract any impression that the first plates might give that faience was for small work only; for the work in Philadelphia is fifteen feet high and carried around the immense waiting-room. It is a pity that Plate VII. could not have been executed in color in fac-simile of the drawing, which is a suggestion by Clarence Luce of New York of a color treatment for a faience vestibule; even in monochrome the reproduction is charming. Plate VIII., which is the last plate of the initial collection, is a drawing by Mr. Schweinfurth of the depositors' desk in the Worcester Five Cents Savings Bank, Messrs. Earle & Fisher, architects, and is another suggestion for the interior use of faience. The plates are exceptionally fine albertypes, executed by the Forbes Lithographic Mfg. Co., Boston. Owing to the great expense of producing such a catalogue and the impossibility of indiscriminate distribution, the publishers have placed upon it the nominal price of fifty cents per copy, postpaid, and it is worth several times that price to every architect interested in such work.

In closing, while Messrs. Fiske, Homes & Co., managers of the Boston Terra-Cotta Works, need no introduction from us to the architectural profession, it may be well to say a word or two in explanation of the manufacture of faience. The terra-cotta work of to-day, in this country, shows great advance over that of a decade ago, and it is probably true that in quality of stock and in artistic and mechanical execution we are fully abreast, if not a little ahead, of European countries. For architectural faience the very highest skill in the production of terra-cotta is required. Not only must the work be very near perfection mechanically, not only must it be of the very highest order artistically, *but it must be composed of such ingredients* as will insure the proper uniting of the "biscuit" and the enamel. The enamelling is done in special kilns under the supervision of Messrs. Atwood & Grueby, and here again the utmost nicety in proportioning ingredients, and the greatest care in firing, are necessary, that the carefully prepared "biscuit" be not ruined in the final process. So that, with all the risks of terra-cotta in its highest forms, and the added risks of the enamelling process, architectural faience presents one of the highest and most difficult forms of clay production.

PROF. F. W. CHANDLER, of the Department of Architecture, Massachusetts Institute of Technology, has compiled for the use of students in his department some notes on limes, cements, mortars, and concretes, that for clearness, brevity, and yet completeness are admirable in every way. In preparing these notes, Prof. Chandler has consulted a large number of treatises, reports, transactions of engineering and scientific societies, and he is well fitted by years of active practice in architecture to select from this mass of information such facts as will aid the student of modern construction, and leave out everything likely to hamper him. There is little that any architect ever has occasion to know about the mixing of mortar, cement, and concrete, the selection of lime, cement, and sand, grouting, freezing of mortar or cement, testing, etc., that will not be found in this little pamphlet. The remarks about Beton Coignet and Coquina Concrete (of which the St. Augustine hotels are built) are particularly interesting. These notes are printed, not published, although they should be. A nominal price of twenty-five cents per copy is charged the students, and we will secure them for our readers at that price.

THE current issue of the *Clay-Worker* contains its usual amount of good material, more interesting to the manufacturer, though, than to the architect.



TITLE-PAGE OF THE CATALOGUE OF THE BOSTON FAIENCE WORKS.

BY HAROLD MAGONIGLE.

THE ILLUSTRATIONS.

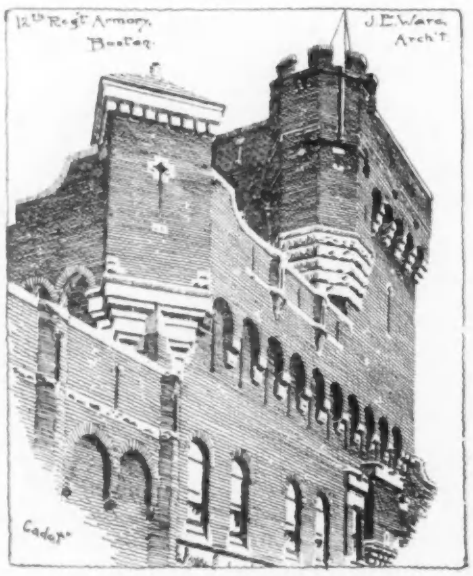
Plate 25. Residence for Mrs. W. H. Heath. E. A. Kent, architect, Buffalo, N. Y.

Plates 26 and 27. Details of the Foulke & Long Institute, Philadelphia. Cope & Stewardson, architects. These buildings, shown by a photograph on page 33, are built of common red brick with red terra-cotta trimmings, executed by Stephens, Armstrong & Conkling of Philadelphia. The detailed treatment of the windows is given on plate 26, and that of the porch on the school (the other building is the residence) on plate 27.

Plates 28 to 32. Draughtsmen's competition of the Minnesota Chapter of the American Institute of Architects. Note: The plates are all reproduced to one-inch scale for elevations and two-inch scale for the details. First mention, Max Foester (plate 28); second mention, John Rachac, Jr. (plate 29); honorable mention, N. C. Schrantz (plate 30); Leo Goodkind (plate 31); Fred Nason (plate 32). The programme was as follows: —

Problem I. To design a window opening with moulded brick finish. Size of opening, three feet six inches by seven feet; style, Italian Renaissance. Required: —

An elevation to one-and-one-half-inch scale and moulding details to three-inch scale, the numbers and make of all moulded brick to be clearly shown on drawing or an isometrical perspective of stretcher and header of all moulded brick not given in catalogue.



DRAWN FOR COMPETITION No. 9.

BY C. HOWARD LLOYD, BOSTON. A NEAR APPROACH TO A GOOD DRAWING, BUT A HEAVY HALF-TONE PREVAILS TOO MUCH AND THE LINE USED IS RATHER TOO STUDIOUSLY WAVY. D. A. GREGG.

Your journal is in just the right line to check and tone down the callow, flashy architecture of our vigorous city. I esteem it highly.

H. M. PATTERSON, Architect, Butte, Mont.

PATENTS.

A MONTHLY LIST OF RECENT PATENTS GRANTED, WHICH CONCERN THE CLAY-WORKING AND THE BUILDING INDUSTRY, REPORTED SPECIALLY FOR THE "BRICKBUILDER," BY H. M. STERLING, ATTORNEY AT LAW, WASHINGTON, D. C.

BRICK-KILN. Napoleon B. Hafer, Bloomington, Ill. April 11, 1893. No. 495,134.

BRICK MACHINE. Harry L. Balson, St. Louis, Mo. April 4, 1893. No. 494,911.

FIREPROOF PARTITION FOR BUILDINGS. Isaac Johnson, New York, N. Y. April 4, 1893. No. 494,866.

CONTINUOUS BRICK-KILN. William Oakes and James Oakes, Leeds, England. April 4, 1893. No. 494,687.

CLAY MILL. Calvin W. Vaughn, Cuyahaga Falls, Ohio. March 28, 1893. No. 494,515.

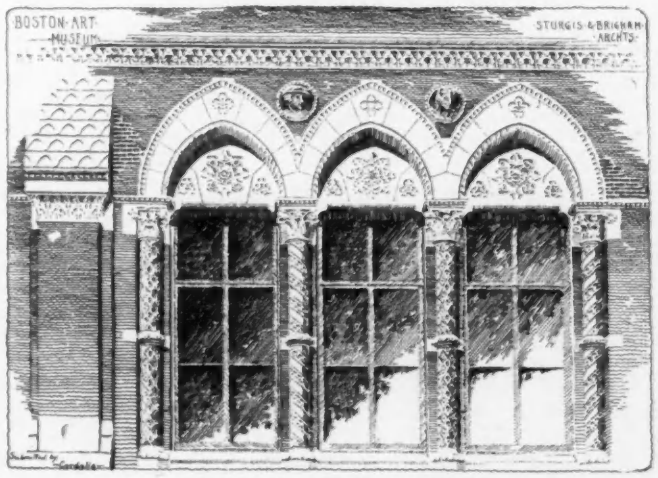
PUG-MILL FOR BRICK MILLS. Henry J. Bond, and Louis Hilling, Shawnee, Ohio. April 11, 1893. No. 495,389.

APPARATUS FOR MIXING WET AND DRY CEMENT MATERIALS. Henry Frochling, Richmond, Va. April 11, 1893. No. 495,323.

BUILDING SHIELD. William Durkin, Philadelphia, Pa. April 4, 1893. No. 494,848.

CEMENT. Vernor F. L. Smidth, Copenhagen, Denmark. April 4, 1893. No. 494,763.

METALLIC CEILING. Albert Friedley, Chicago, Ill., assignor of one half to Herman Voshardt, same place. April 18, 1893. No. 495,935.



DRAWN FOR COMPETITION No. 9.

BY C. HOWARD LLOYD, BOSTON.

RICH IN COLOR, WITH BEAUTIFUL CAREFUL DRAWING OF DETAIL. THE HALF-TONES ARE A TRIFLE DARK, AND THE WAVED LINE A LITTLE TOO MANIFEST. THERE IS A LARGE AMOUNT OF TERRA-COTTA IN THE SUBJECT. D. A. GREGG.

PROFESSIONAL CHANGES.

Messrs. Wendler & Spiro, specialists in mill architecture, have moved their offices from Watertown, N. Y., to Carthage, N. Y.

Messrs. Gould & Angell, of Providence, have taken into partnership Mr. Frank H. Swift, who has for some years been their first assistant. The new firm, Gould, Angell & Swift, will have, in addition to their Providence office, a Boston one at 31 Milk Street.

Mr. W. W. Kent has entered into a partnership with Messrs. John and George E. Jardine of New York, the new firm being Jardine, Kent & Jardine. The former offices of Messrs. D. & J. Jardine, at 1262 Broadway, will be occupied.

Mr. Geo. H. Clemence, of Worcester, has associated with him his brother, Mr. Chas. R. Clemence, of New York, under the firm name of Geo. H. Clemence & Co. The senior member of the firm studied designing under the late Prof. Letang, at the Massachusetts Institute of Technology, and the junior member has had a good training in construction with both Norcross Brothers and Darling Brothers.

Mr. Frank Ashburton Moore has opened an office at his residence, 25 Catherine Street, Worcester, Mass. Mr. Moore is a graduate of the Massachusetts Institute of Technology, and has worked with Mr. R. M. Hunt, of New York. For the better part of two years he has been travelling in Europe.

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Please send me THE BRICKBUILDER for 1893, and also the back numbers for 1892. I read a copy which was mailed to me, and find some very valuable designs and drawings in same. I think it is a paper that ought to be in every mason contractor's office.

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W. D. BUTTERFIELD, Architect, Detroit, Mich.

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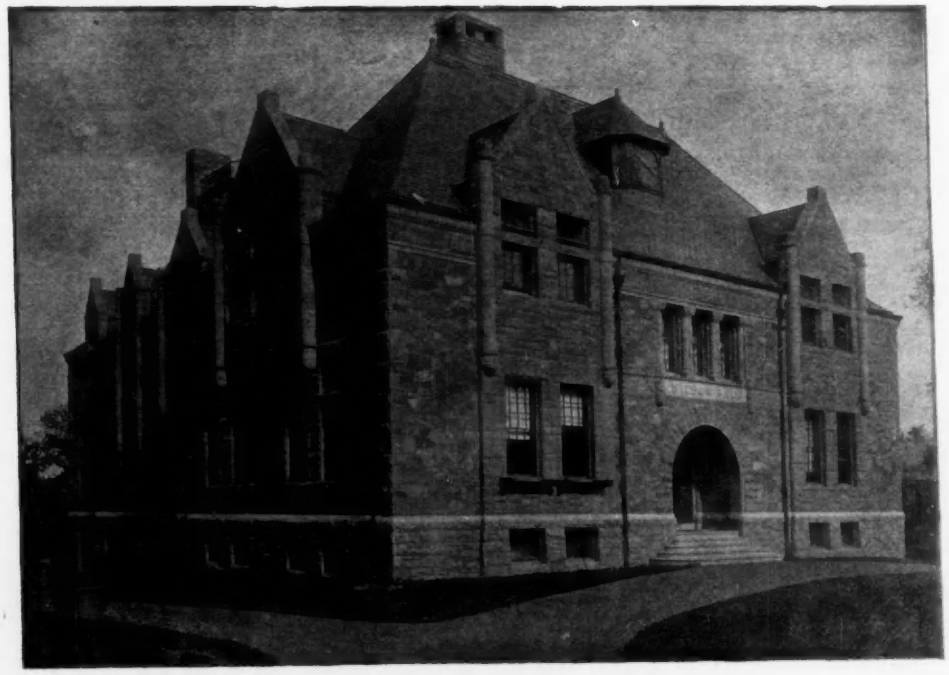
J. C. STITT, Architect, Norfolk, Neb.

I have a number of illustrations of Richardson's buildings, but of course we don't get the beauty of detail in the brickwork that is brought out in the copy you sent me.
L. A. DICKINSON, Architect, Elyria, O.



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